



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,025	08/27/2003	William W. King	PII-28302/04(ANG)	5132
25006	7590	08/31/2007		
GIFFORD, KRASS, SPRINKLE, ANDERSON & CITKOWSKI, P.C			EXAMINER	
PO BOX 7021			ZIMMERMAN, JOHN J	
TROY, MI 48007-7021				
			ART UNIT	PAPER NUMBER
			1775	
			MAIL DATE	DELIVERY MODE
			08/31/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/649,025	Applicant(s) KING, WILLIAM W.	
	Examiner John J. Zimmerman	Art Unit 1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-10, 14-22 and 31-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-10, 14-22 and 31-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 8/27/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

FOURTH OFFICE ACTION

Amendments

1. This Fourth Office Action considers the "AMENDMENT" received June 27, 2007.

Claims 8-10, 14-22 and 31-41 are pending in this application.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 9-10, 14-22, 32-33 and 39-41 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. It is not clear where support can be found in the original disclosure for the limitation that the "iron-aluminum intermetallic comprises at or between 18% and 56% aluminum by weight" (e.g. claim 9, line 2; claim 32, line 2). Applicant cites page 9, lines 9-14, as support for the limitation (e.g. see page 14, 2nd full paragraph, of applicant's response received June 27, 2007), but a review of the cited section of the specification shows no support

Art Unit: 1775

for the limitation. Dependent claims 10, 14-22, 33 and 39-41 are rejected because they incorporate the limitation from one of preceding claims 9 or 32.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 8-10, 14-16, 20-21, 31-35 and 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okumura (JP 06-299312).

6. Okumura discloses steel having an iron-aluminide intermetallic alloy layer with a thickness of about 1 micron or less (but with comparative examples of up to 5 microns - e.g. see comparative examples in Table 2) and a bath aluminum content of 20-80 wt.% (e.g. see paragraph [0014] and Table 2). The ability of the steel substrate to be miscible with molten zinc would be inherent to the composition of the article. An upper zinc layer is formed (e.g. paragraph [0010]). Although Okumura claims an iron-aluminide intermetallic alloy layer thickness of 1 micron or less and applicant claims a thickness of "greater than 1 micron" (e.g. claim 8, line 4), the thicknesses of 1 micron and "greater than 1 micron" are so close that, unless shown otherwise, one of ordinary skill in the art would not expect there to be a patentable distinction between the properties of the two thicknesses. See MPEP 2144.05 for the

Art Unit: 1775

obviousness of range endpoints that approximate each other. In any event, Okumura clearly shows comparative examples having intermetallic layers of 1.5 microns, 2 microns, 3 microns and 5 microns (e.g. see the comparative examples in Table 2). See MPEP 2123 for use of comparative embodiments to reject. Okumura may differ from the claims in that Okumura may not specify that the steel used in his invention is "mild" steel (e.g. see claim 8, line 2), but in view of the context of Okumura, it would have been obvious to one of ordinary skill in the art at the time the invention was made that any type of conventional steel typically used for building materials (e.g. mild steels) would be appropriate for his invention. Regarding the thicknesses of the zinc coatings in some of the claims, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the thickness of the zinc coating layer to meet the life time and environmental conditions expected of a particular steel article. Regarding claim 41, barring evidence that a tube shape is a patentable distinction, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the corrosion resistant sheet of Okumura in any conventional form that would be used for building materials. *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966). Regarding claims 9 and 32 which recite that the "iron-aluminum intermetallic comprises at or between 18% and 56% aluminum by weight" (e.g. claim 9, line 2; claim 32, line 2), Okumura's bath content for aluminum and zinc overlaps the content for these bath elements disclosed by applicant to produce applicant's invention (e.g. see page 7, lines 4-12, of the applicant's specification) and therefore, barring evidence to the contrary, the bath of Okumura would be expected to produce an iron-aluminum intermetallic composition that would fall within the claimed range. Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics

Art Unit: 1775

of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

7. Claims 8-10, 14-22 and 31-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okumura (JP 06-299312) in view of applicant's disclosure of the prior art.

8. Okumura discloses steel having an iron-aluminide intermetallic alloy layer with a thickness of about 1 micron or less (but with comparative examples of up to 5 microns - e.g. see comparative examples in Table 2) and an aluminum content of 20-80 wt.% (e.g. see paragraph [0014] and Table 2). The ability of the steel substrate to be miscible with molten zinc would be inherent to the composition of the article. An upper zinc layer is formed (e.g. paragraph [0010]). Although Okumura claims an iron-aluminide intermetallic alloy layer thickness of 1 micron or less and applicant claims a thickness of "greater than 1 micron" (e.g. claim 8, line 4), the thicknesses of 1 micron and "greater than 1 micron" are so close that, unless shown otherwise, one of ordinary skill in the art would not expect there to be a patentable distinction between the properties of the two thicknesses. See MPEP 2144.05 for the obviousness of range endpoints that approximate each other. In any event, Okumura clearly shows comparative examples having intermetallic layers of 1.5 microns, 2 microns, 3 microns and 5 microns (e.g. see the

Art Unit: 1775

comparative examples in Table 2). See MPEP 2123 for use of comparative embodiments to reject. Okumura may differ from the claims in that Okumura may not specify that the steel used in his invention is "mild" steel (e.g. see claim 8, line 2), but in view of the context of Okumura, it would have been obvious to one of ordinary skill in the art at the time the invention was made that any type of conventional steel typically used for building materials (e.g. mild steels) would be appropriate for his invention. Okumura may differ from some of the claims in that Okumura may not disclose the further use of a phosphating agent crystalline comprising hexafluoro-titanium phosphate and an aluminum particulate filled cured epoxy overlayer, but applicant admits that it is conventional in the art to use a combination of barrier coatings and galvanic coatings in a multilayer laminate coating in order to further protect steel (e.g. see Background of the Invention - page 3, first full paragraph) and applicant also admits that phosphating agent crystalline comprising hexafluoro-titanium phosphate and an aluminum particulate filled cured epoxy overlayer are commonly used in the prior art to increase corrosion resistance (e.g. see Background of the Invention - page 2, first full paragraph; page 3, line 21 - page 4, line 23). In view of applicant's disclosure of the prior art, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use one of or a combination of phosphating agent crystalline comprising hexafluoro-titanium phosphate and an aluminum particulate filled cured epoxy coatings on the plated steel of Okumura because applicant admits that combinations of these types of coatings are generally used in the prior art to further increase the corrosion resistance of steel articles. Regarding claim 41, barring evidence that a tube shape is a patentable distinction, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the corrosion resistant sheet of Okumura in any conventional form that would

Art Unit: 1775

be used for building materials. *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966). In addition, applicant admits that piping is a conventional configuration in this field (e.g. see Background of the Invention - page 2, lines 1-4). Regarding the thicknesses of the zinc coatings in some of the claims, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the thickness of the zinc coating layer to meet the life time and environmental conditions expected of a particular steel article. Applicant discloses that this type of thickness optimization is conventional (e.g. see Background of the Invention - sentence spanning pages 2 and 3). Regarding claims 9 and 32 which recite that the "iron-aluminum intermetallic comprises at or between 18% and 56% aluminum by weight" (e.g. claim 9, line 2; claim 32, line 2), Okumura's bath content for aluminum and zinc overlaps the content for these bath elements disclosed by applicant to produce applicant's invention (e.g. see page 7, lines 4-12, of the applicant's specification) and therefore, barring evidence to the contrary, the bath of Okumura would be expected to produce an iron-aluminum intermetallic composition that would fall within the claimed range. Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

Art Unit: 1775

9. Regarding the use of applicant's disclosure of the prior art in rejections, it is axiomatic that consideration of the prior art cited by the examiner must, of necessity, include consideration of the admitted state of the art found in applicant's specification, *In re Davis*, 305 F.2d 501, 134 USPQ 256 (CCPA 1962); *In re Hedges*, 783 F.2d 1038, 228 USPQ 685 (Fed. Cir. 1986). Admitted knowledge in the prior art may be used in determining patentability of the claimed subject matter, *In re Nomiya*, 509 F.2d 566, 184 USPQ 607 (CCPA 1975). Regarding the use of comparative examples in the prior art, all the disclosures in a reference must be evaluated for what they fairly teach one of ordinary skill in the art even though the art teachings relied upon are phrased in terms of a non-preferred embodiment or even as being unsatisfactory for the intended purpose, *In re Boe*, 148 USPQ 507 (CCPA 1966); *In re Smith*, 65 USPQ 167 (CCPA 1945); *In re Nehrenberg*, 126 USPQ 383 (CCPA 1960); *In re Watanabe*, 137 USPQ 350 (CCPA 1963).

Response to Arguments

10. Applicant's arguments and amendments filed June 27, 2007 have been fully considered but they are not persuasive with regards to the pending rejections.

11. Applicant's arguments that the prior art does not disclose or make obvious the limitation that the "iron-aluminum intermetallic comprises at or between 18% and 56% aluminum by weight" (e.g. claim 9, line 2; claim 32, line 2) are noted. Applicant cites page 9, lines 9-14, as support for the limitation (e.g. see page 14, 2nd full paragraph, of applicant's response received

Art Unit: 1775

June 27, 2007), but a review of the cited section of the specification shows no support for the limitation.

12. Applicant's arguments regarding Okumura have been carefully considered, but the prior art of record clearly discloses examples in applicant's claimed thickness range even if they are comparative examples and are not preferred for applicant's purposes. All the disclosures in a reference must be evaluated for what they fairly teach one of ordinary skill in the art even though the art teachings relied upon are phrased in terms of a non-preferred embodiment or even as being unsatisfactory for the intended purpose, *In re Boe*, 148 USPQ 507 (CCPA 1966); *In re Smith*, 65 USPQ 167 (CCPA 1945); *In re Nehrenberg*, 126 USPQ 383 (CCPA 1960); *In re Watanabe*, 137 USPQ 350 (CCPA 1963). A reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art, including nonpreferred embodiments. *Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989). As noted in the rejections applying Okumura (JP 06-299312), although Okumura claims an iron-aluminide intermetallic alloy layer thickness of 1 micron or less and applicant claims a thickness of "greater than 1 micron" (e.g. claim 8, line 4), the thicknesses of 1 micron and "greater than 1 micron" are so close that, unless shown otherwise, one of ordinary skill in the art would not expect there to be a patentable distinction between the properties of the two thicknesses. See MPEP 2144.05 for the obviousness of range endpoints that approximate each other. In any event, Okumura clearly shows comparative examples having intermetallic layers of 1.5 microns, 2 microns, 3 microns and 5 microns (e.g. see the comparative examples in Table 2). See MPEP 2123 for use of comparative embodiments

Art Unit: 1775

to reject. Okumura's disclosure of examples of the use of intermetallic alloy layers in and about the thickness range claimed by applicant is evidence that Okumura is not teaching away from applicant's claimed invention, but rather that Okumura discloses and makes obvious applicant's invention before the invention thereof by applicant.

13. Applicant further argues that that applicant's claimed invention is patentable over the applied prior art in that applicant has shown unexpected results and also that applicant has shown criticality of the claimed range. A review of the applicant's disclosure, however, shows no factual results establishing *unexpected* results or *criticality* of the claimed intermetallic thickness range. Mere discussion of unexpected results or criticality of ranges is not sufficient to establish unexpected results. The arguments of counsel cannot take the place of evidence in the record. *In re Schulze*, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965). To establish unexpected results over a claimed range, applicants should compare a sufficient number of tests both inside and outside the claimed range to show the criticality of the claimed range. *In re Hill*, 284 F.2d 955, 128 USPQ 197 (CCPA 1960). The evidence relied upon should establish "that the differences in results are in fact unexpected and unobvious and of both statistical and practical significance." *Ex parte Gelles*, 22 USPQ2d 1318, 1319 (Bd. Pat. App. & Inter. 1992) (Mere conclusions in appellants' brief that the claimed polymer had an unexpectedly increased impact strength "are not entitled to the weight of conclusions accompanying the evidence, either in the specification or in a declaration."); *Ex parte C*, 27 USPQ2d 1492 (Bd. Pat. App. & Inter. 1992) See also *In re Nolan*, 553 F.2d 1261, 1267, 193 USPQ 641, 645 (CCPA 1977) and *In re Eli Lilly*, 902 F.2d 943, 14 USPQ2d 1741 (Fed. Cir. 1990) as discussed in MPEP § 716.02(c). Evidence

Art Unit: 1775

of unexpected properties may be in the form of a direct or indirect comparison of the claimed invention with the closest prior art which is commensurate in scope with the claims. See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). See *In re Blondel*, 499 F.2d 1311, 1317, 182 USPQ 294, 298 (CCPA 1974) and *In re Fouche*, 439 F.2d 1237, 1241-42, 169 USPQ 429, 433 (CCPA 1971). Whether the unexpected results are the result of unexpectedly improved results or a property not taught by the prior art, the "objective evidence of nonobviousness must be commensurate in scope with the claims which the evidence is offered to support." In other words, the showing of unexpected results must be reviewed to see if the results occur over the entire claimed range. *In re Clemens*, 622 F.2d 1029, 1036, 206 USPQ 289, 296 (CCPA 1980). See also *In re Peterson*, 315 F.3d 1325, 1329-31, 65 USPQ2d 1379, 1382-85 (Fed. Cir. 2003) (data showing improved alloy strength with the addition of 2% rhenium did not evidence unexpected results for the entire claimed range of about 1-3% rhenium); *In re Grasselli*, 713 F.2d 731, 741, 218 USPQ 769, 777 (Fed. Cir. 1983). See MPEP § 716.02(b) - § 716.02(d).

14. Regarding claims 9 and 32 which recite that the "iron-aluminum intermetallic comprises at or between 18% and 56% aluminum by weight" (e.g. claim 9, line 2; claim 32, line 2), Okumura's bath content for aluminum and zinc overlaps the content for these bath elements disclosed by applicant to produce applicant's invention (e.g. see page 7, lines 4-12, of the applicant's specification) and therefore, barring evidence to the contrary, the bath of Okumura would be expected to produce an iron-aluminum intermetallic composition that would fall within the claimed range. Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where

Art Unit: 1775

claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

15. Regarding applicant's arguments under the section "Evidence of Secondary Considerations" (page 12 of applicant's response), no actual factual evidence of secondary considerations were submitted for consideration. Contrary to applicant's arguments, no actual objective evidence of long felt need has been provided in this prosecution for consideration. Establishing long-felt need *requires objective evidence* that an art recognized problem existed in the art for a long period of time without solution. *In re Gershon*, 372 F.2d 535, 539, 152 USPQ 602, 605 (CCPA 1967); *Orthopedic Equipment Co., Inc. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376, 217 USPQ 1281 (Fed. Cir. 1983).

Conclusion

16. Applicant's amendment received June 27, 2007 necessitated the new ground of rejection under 35 U.S.C 112, first paragraph, presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

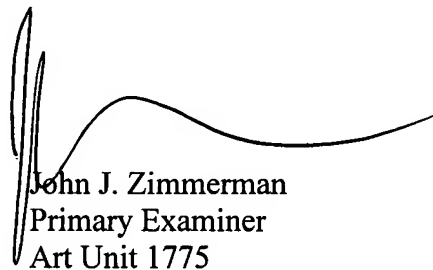
Art Unit: 1775

17. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J. Zimmerman whose telephone number is (571) 272-1547. The examiner can normally be reached on 8:30am-5:00pm, M-F. Supervisor Jennifer McNeil can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1775

19. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



John J. Zimmerman
Primary Examiner
Art Unit 1775

jjz
August 27, 2007